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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,601	04/16/2001	Nobuaki Hashimoto	109279	2047

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EXAMINER

ALCALA, JOSE H

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,601

Applicant(s)

HASHIMOTO, NOBUAKI

Examiner

José H Alcalá

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 6 and 9-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8, 40 and 41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is made final, as necessitated by amendment.

Election/Restrictions

2. This application contains claims 6,9-39 drawn to an invention nonelected with traverse in Paper No. 9. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is not described in the specification, how can the third surface of the first substrate and the second surface of the second substrate be disposed to oppose each other.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-8,7,8,40 and 41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claim 1, it is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: If the first and second substrates are not in contact with each other, how are them electrically connected? In addition, it fails to include the actual component element or device that electrically connects the two substrates.

Regarding Claim 2, it is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: If the first and second substrates are not in contact with each other, how are them adhered? In addition, it fails to include the actual component element or device that adheres the two substrates.

Regarding Claim 4, it is not clear if the through holes are formed in the first substrate, and the second surface and the third surface are opposing each other, how can the through holes in the first substrate electrically connect both interconnects.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-8, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perkins et al. (US Patent No. 5,239,448) in view of Ozaki (US Patent No. 4,817,280). As best understood by the examiner:

Regarding Claim 1, Perkins teaches an interconnect substrate comprising: a first substrate (reference number 8) on which a first interconnect pattern (reference number 12) is formed; and a second substrate (reference number 2) on which a second interconnect pattern (reference number 6) is formed; at least one of the first interconnect pattern and the second interconnect pattern has a mounting region (reference number 33) for an electronic chip; and the first interconnect pattern and the second interconnect pattern are electrically connected (See Figure 1). Perkins fails to explicitly teach that the first and second substrates are disposed so as to overlap each other but so as not to be in contact with each other. Ozaki teaches two substrates (reference number 10 and 20) overlapping each other but separated by an adhesive bonding layer (reference number 30) so as not to be in contact with each other. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Perkins and Ozaki in order to have the adhesive bonding layer between the first and second substrates, so that they overlap but are not in

contact with each other, thus improving the alignment between the substrates (column 3, lines 31-35).

Regarding Claim 2, Perkins teaches that the second substrate (reference number 2) is larger than the first substrate. Perkins fails to teach that a whole surface of the first substrate is adhered to the second substrate. Ozaki teaches that a whole surface of the first substrate (reference number 10) is adhered to the second substrate (reference number 20). See Figure 6.

Regarding Claim 3, as best understood by the examiner, Perkins teaches that the first interconnect pattern (reference number 12) is formed on one surface (top surface of reference number 8) of the first substrate (reference number 8); the second interconnect pattern (reference number 6) is formed on one surface of the second substrate; and a surface of the first substrate opposite to the surface on which the first interconnect pattern is formed and the surface of the second substrate on which the second interconnect pattern is formed are disposed to oppose each other (See figure 1).

Regarding Claim 3, Perkins teaches that the first interconnect pattern (reference number 12) is formed on a first surface (top surface of reference number 8) of the first substrate (reference number 8); the second interconnect pattern (reference number 6) is formed on a second surface (top surface of reference number 2) of the second substrate (reference number 2); and a third surface (bottom surface of reference number 8) of the first substrate (reference number 8) opposite to the first surface (top surface of reference number 8) and the second surface (top surface of reference

number 2) of the second substrate (reference number 2) are disposed to oppose each other (See Figure 1).

Regarding Claim 4, Perkins teaches that a plurality of through-holes are formed in the first substrate (reference number 10), and the first interconnect pattern and the second interconnect pattern are electrically connected via the through-holes (See Figure 1).

Regarding Claim 5, Perkins teaches that the first interconnect pattern passes over the through-holes; the through-holes are positioned over the second interconnect pattern; and a conductive material (the material located on through holes reference number 10), contacting the first and second interconnect pattern is provided within the through-holes (See Figure 1)

Regarding Claim 7, Perkins teaches that a plurality of through-holes are formed in the second substrate (Reference numbers 3,38), for the formation of a plurality of external terminals electrically connected to the second interconnect pattern and projecting from a surface of the second substrate opposite to the surface on which the second interconnect pattern is formed (See Figure 1).

Regarding Claim 8, Perkins teaches that the through-holes (reference number 10) formed in the first substrate and the through-holes formed in the second substrate (reference number 38) are formed in communicating positions (See figure 1 where the fourth vias, from left to right, of both substrates are aligned).

Regarding Claim 40, Perkins as modified by Ozaki teaches an adhesive (reference number 30 of Ozaki) disposed between the first and second substrates.

Regarding Claim 41, Perkins as modified by Ozaki, suggests that the the conductive material (the material of reference number 10) projects from the third surface of the first substrate (connecting both interconnects reference numbers 12 and 6).

Response to Arguments

9. As per applicant's request for rejoinder of claims 6 and 9-39, it is pointed out that the Restriction and Election of Species Requirements, were made final in the last office action and a rejoinder of claims would only be considered if generic claim 1 is allowed. Furthermore, it is pointed out that claim 14 is not generic, and is not readable on the elected invention, therefore it is still withdrawn from consideration.

10. Applicant's arguments with respect to claims 1-5, 7 and 8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

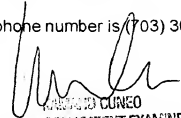
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references teach some of the elements of the instant claimed invention: Fowler (US Patent No. 3,760,090), Kobayashi et al. (US Patent No. 4,449,769), Redwanz (US Patent No. 3,780,352) and Hastings et al. (US Patent No. 3,888,639).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to José H Alcalá whose telephone number is (703) 305-9844. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703) 308-1233. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



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